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ABSTRACT

Teachers have always engaged in analysis of each student's learning responses. The simplest and most common example is the teacher's evaluation of a student's answer as being either correct or incorrect. Teachers also plan subsequent activities based upon this analysis. This analytic approach adapts the instruction or practice to match the student's particular learning style or level of development. The analysis may be derived from a single response of a student in a teaching-learning situation or a synthesis of a number of observed behaviors of the student. This collection of case study materials is the product of a professional staff development project sponsored by two neighboring school districts. The concept of analytic teaching was developed to give teachers a comprehensive, widely applicable construct, which they could readily share. The accounts relate the teachers' approaches to analysis and adaptation with editor's comments regarding the teaching techniques used; the exploration of the student's abilities; and the use of analytic teaching. (Author/JMF)

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TEACHERS CAN

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TEACHERS CAN:

Suggestions by Teachers
For Teachers

Mary Swearengen, Editor

CONTENTS

1. Introduction: Toward Teacher Competence
Mary Swearengen

2. Teaching Techniques
Jack Shinaut; Javier Diaz; Maudell Fox; Maurine Baldwin

3. Exploring the Student's Abilities
Mary Barone; Betty Dodson; Betty Jo Pippin; Sharon Duncan; Sandra Jorgensen

4. Analytic Teaching
Betty Dodson; Sandra Jorgensen; Mary Barone

5. In Pursuit of Excellence
Betty Jo Pippin

Introduction :

Toward Teacher Competence

Mary Swearengen

The greatest apparent need in teaching, at all levels, from pre-school to the graduate university, is a rationale for the teacher's activities. It is not that the teacher's professional preparation has lacked theory. Far from it. Teachers commonly complain that they were inundated with pure theory, that the very word triggers retching reaction. The weak link appears to be just that, a tenuous connection, in the instructor's understanding at least, between theory and practice. For the most part, actual practice with real children has not occurred simultaneously with the presentation of learning theory, but has been tacked on, as sort of afterthought, near the end of a teacher's undergraduate preparation. At this point the teacher candidate has been given some teaching models, hints about discipline and housekeeping, and a bag of tricks called "methods" or "techniques." It is a marvel that teachers do so well with the majority of students, since on the whole, they do not know, basically, why they do what they do.

Teachers today are among the more idealistic, optimistic, and committed groups in this society. In addition, they are generally competent, to a high degree, in their own profession, and therefore do not feel the need for artificial elevations of status. Nevertheless some educators have exhibited a tendency to adopt medical terms to describe various learning and teaching activities. A few have seemed to hope to gain recognition and reflected glory from what they perceive to be a prestigious profes-

*Dr. Mary Swearengen was formerly associate professor in counseling psychology at McGill University and coordinator of clinical programs at the University of Tulsa.

sion and to enhance certain educational practices with borrowed tags: "diagnosis," "prescription," "remediation," and so on.

Not only do these terms smack of psuedo-medical practice, but they also carry an implication of disease or impairment. From this point of view, it is assumed that the individual who does not learn is sick or is impaired in some manner. This is not to deny that some conditions may reasonably be termed handicaps. It is, rather, to recognize the inescapable fact that a so-called "learning disability" is sometimes a function of teaching practices. It may no longer exist, as such, when appropriate actions are initiated in the teaching-learning situation. The concept of analytic teaching moves away from the medical model and toward a rational assessment of valid and legitimate idiosyncracies which characterize all human beings.

In the school, teachers are disappointed and distressed when a child fails to learn what is assigned him in the classroom. A very real problem confronts the teacher who may have twenty-five to thirty students, five or more of whom may be experiencing serious difficulty but, unfortunately, not always the same difficulty. Moreover, these students who need special attention are not always the same students. The identities of the non-achievers vary from day to day and from subject to subject. For example, on any one day, five may have trouble with math, six others may have difficulty with reading, while in several from each of these groups,

individual differences appear in readiness, in achievement, and in learning style. In most cases, the teacher's training has not prepared him for dealing with such diversity within the classroom. He can only note errors, while he continues to give almost identical assignments to every student. The teacher usually feels that there should be a better way, but he is at a loss for reasonable alternatives. In desperation, he may take one of several different routes, some of them clearly destined to end in failure.

(1) A student is encouraged to "try harder," "work harder," "take your book (or other material) home with you." The teacher may honestly believe that this is all that the student needs to do and, in rare cases, it is. Or he may hope that the parents will have time to help the student or will force him to do his work.

(2) A student is given additional similar material, at approximately the same level of difficulty, for practice or for homework.

(3) A student is told to memorize certain facts.

(4) The teacher assigns material at what he <u>thinks</u> is a lower level of difficulty, such as, "learn the three-times table," for a child who is having difficulty remembering the "seven-times" facts.

(5) A student is required to attend summer school where methods and materials are essentially the same as those which were unsuccessful with this student during the preceding regular school term.

(6) A student is required to repeat the whole

year under the same or similar circumstances.

Efforts are often made from without to assist the teacher. Some are worthy, others less so.

(1) Students who are apparently much below the intellectual level of their peers are placed in a special group in a separate room or building for instruction thus reducing somewhat the vertical range of general ability in the regular classroom.

(2) Consultants are provided, whose assistance deals for the most part with curriculum, textbook or other general teaching materials. Occasionally they may be able to make suggestions of certain teaching techniques which a teacher can add to his repertoire.

(3) A school psychologist is employed, whose business it is to test children referred to him by the teacher. The process from teacher referral to final report is often weeks or months in accomplishment. Recommendations for teaching, if any, are often no longer applicable, or the terminology is too far removed from the teacher's understanding or, at best the teacher has no idea why a certain procedure is successful or unsuccessful.

(4) A special assistance teacher, or an itinerant one, is assigned to one or more buildings, to work individually with students sent to him for parts of the day. When a student has been helped over his difficulty, he is returned to the classroom, and the regular teacher resumes the task.

The chief fault with all these systems is that the

regular classroom teacher often does not become more adequate in recognizing the nature of student's learning problems and in adapting his methods and materials accordingly. Instead he tends to become more and more dependent and less and less confident of his own ability, initiative and resourcefulness. Increasing resentment and frustration sometimes result in a sort of stubborn defensiveness, or resignation, and an acceptance of student failures as something about which little can be done. The hope is that the analytic concept may be the means of opening a door for many teachers into new understanding and competence with enhanced confidence and self-esteem.

To a degree, teachers have always engaged in analysis of student's learning responses. The simplest and most common example is the teacher's evaluation of a student's answer as being either correct or incorrect. Teachers also plan subsequent activities based upon this analysis. For example, a teacher may decide to give further instruction regarding some concept, or he may require a student to engage in additional practice of a certain skill. Less frequently, perhaps, the teacher adapts the instruction or practice to match, as nearly as possible, the student's particular learning style or level of development. Teachers in the lower grades are more apt to take this approach than are those in the upper grades or in the secondary school.

Analytic teaching is applicable by any teacher of any subject in any grade, or in any setting, whether

in a regular classroom group or in individual tutoring. The analysis may be derived from a single response of a student in a teaching-learning situation. More often, it is a synthesis of a number of observed behaviors of the student.

The three aspects of students' responses are considered, although there are instances of overlapping among the three areas being assessed. The factors which contribute to analysis are (1) the student's current stage of intellective activity or of perceptual-motor development, or of both, (2) the student's preferred channel for reception of information from his environment, and (3) the student's success-failure point in a ladder of achievements in a particular subject or in a particular skill.

Attacking first the most important factor in assessment, the developmental stage, the frame of reference is the research of Jean Piaget himself and his incalculable influence as reflected in the work of many contemporary theorists and practitioners. The teacher must recognize that neither a student's chronological age, nor the measure of his so-called "intelligence" is necessarily the key to his ability to acquire a concept or a skill. His current developmental stage will determine many kinds of learning.

Much lip-service has been paid to readiness for academic tasks, but in actual practice, the idea has been operant almost exclusively in the early school years, mainly in the kindergarten and in the first grade. Moreover, in by far the majority of cases, readiness has been interpreted, not in terms of an

individual child's level of development, but rather as a structured body of activities prescribed for all children alike and extending over a pre-set number of weeks, or months. Few teachers have known why each exercise was carried out. For many, readiness was part of the early school program which was required by one's supervisor or recommended by one's college professor and which was designed somehow to insure children's subsequent academic success.

It is true, or course, that in any classroom most of the students will be roughly within the same stage of development, be it the sensory-motor, the pre-operational, concrete operations, or formal operations. There are outstanding exceptions, however, and if the teacher is not able to analyze the student's responses in terms of developmental stages, he may utterly fail to teach a needed concept or skill to an otherwise bright and capable individual.

An incident in one of the writer's college classes dramatically illustrates this point. During a group discussion of cause of failure, one highly intelligent college senior volunteered that he had never learned mathematics and that he could scarcely count his change at the store. Somehow he had appeared so outstanding, as indeed he was in other ways, that he had been allowed to slip by until now. Another student offered to tutor him, and in the process of analysis, discovered that in mathematics, at least, he was functioning in the pre-operational stage. Commencing at this level, the tutor was able to bring him to the point of beginning algebra within

a few weeks.

At any point in this student's school career, a perceptive teacher, trained in anaylsis of student responses, might have discovered this over-sight. The student could have been helped to begin all over again, even on his own, with appropriate learning materials and with a minium of individual guidance. For example, the ability to order objects in sequence as to size, height or volume could have been developed in casual manipulation of the Montessori-type wooden cylinders. Incidentally, teachers should always be dubious of the actual understanding of a child who has been taught to count by rote but with no conception of quantity or of position.

By the third year of school, many children are experiencing a great deal of pressure to "learn the combination facts" in addition, subtraction, multiplication, and even in division. Some teachers are careful to have children manipulate concrete objects until there is evidence of understanding of relationships. Many children catch on in independent, spontaneous play with blocks, sticks, and other toys. Tragically, many others struggle to memorize facts and formulae with no idea of meaning, with growing frustration and despair, and with resulting intense dislike for all mathematics.

The analytic teacher will constantly assess the reasons for students' failures and return at any time to a lower, more concrete, level of development if necessary. If every teacher, elementary or secondary, would diversify his presentations to include concrete

media, even the most talented students would have stronger mathematics foundations together with greater confidence and ease.

The second consideration of the perceptive teacher is the sense modality by which certain individuals learn best. Information is carried from the environment to the central nervous system by several routes. The most apparent are the senses of sight and hearing. In many persons one or both of these channels do not effect an efficient connection with association centers in the brain. Other senses, namely, the tactile (surface touch or pressure) and kinesthetic (muscle and tendon tension), are employed to assist in getting the message through. Many persons accomplish this adjustment spontaneously without ever being aware that it has occurred. Many others have had varying degrees of success, and some are utterly frustrated. Some individuals, even of superior intelligence, may have much difficulty with orientation in space and with the sense of direction. Other sensory cues can be enlisted to help the student who, due to this characteristic, is encountering problems in reading, spelling, writing, and arithmetic.

The truly sensitive mathematics teacher, for instance, will be careful to present materials both auditorily and visually, preferably in that order. Occasional students, even very bright ones, will not be able to receive and retain well through either of these modalities. Therefore, the efficient classroom must contain a math laboratory where many

problems can be solved manually.

The third factor in students' performance concerns the success-failure point in whatever skill or subject area is being taught. The analytic teacher will be aware of the various subskills upon which a given task depends and thus will recognize, or be able to trace, the reason for a student's failure. He will be able to work downward to the point where success can be consolidated, and then to help the student build upward gradually from that point.

For example, the student who transposes letters within words in reading and spelling may need help with sequence of sounds, or below that, the correspondence of sound with symbol. Still lower in this particular ladder of subskills would be auditory discrimination. The secondary teacher who encounters this type of error response in a student will have at hand special developmental exercises which can be recommended even to the older student, privately, of course, and in a dignified manner.

The collection of materials presented in this booklet is the product of a professional staff development project sponsored by two neighboring school districts and carried out by consultant personnel in special education at a regional education service center. Graduate college credit was granted by a local university.

The immediate aim of the project was to pro-

vide opportunity for selected special assistance staff and special education teachers to broaden their knowledge, deepen their understanding, and develop more sophisticated skills in teaching. The ultimate goal was to provide within each of a number of buildings an outstanding resource person who would be able and willing to share his knowledge and skills with his colleagues.

To give the teachers a comprehensive, widely applicable construct, which they could readily share, the concept of analytic teaching was developed. In the accounts which follow, teachers relate their own beginnings with this somewhat novel approach to analysis and adaptation. The reader will recognize that these are among the better practitioners of the profession. Some will obviously be more experienced than others, but all deserve much praise and a great deal of recognition for their courage in submitting their work to the scrutiny of their colleagues. It should be borne in mind that some of the papers sample teaching practices at the beginning of the project, while others represent the growing awareness and developing skill of the group toward the end of the semester.

Teaching Techniques

I began Lesson I by taking out a box of dominoes. The dominoes were marked with the usual standard dot forming numbers on each end with the exception that half of the dominoes had numbers up to nine on each end.

I asked Dina to count the dominoes. She counted them and said that there were fifty-two of them. At this point I shuffled them and asked Dina to give each one of us one domino until they were all passed out. I asked how many dominoes each of us had. She counted them and said we each had twenty-six.

We played a game of dominoes, keeping score as we played. Dina made several high scoring plays. During the game she tried to play an unlike numbered domino to one on the table. She looked at me with a grin. Several times she also counted more for a play than she had actually scored. After the game was over I had Dina shuffle the dominoes. I asked her to give each of us a domino but to give the aide a domino each time she gave us one. After all the dominoes had been passed out, I asked her to count the dominoes that we all three had. She counted and said that we each had seventeen. She discovered that there was one domino left over. We played another game of three handed dominoes. After the game I asked her to hand out the dominoes to four persons. I asked her how many dominoes each player should have. She answered correctly.

Dina now appears to have the ability to make association and to understand that one whole object may

*Mr. Shinaut is a resource room teacher at Coronado High School, El Paso, Texas, Independent School District.

be divided into any number of equal or unequal portions.

For Lesson II, I showed three pictures of different pies to Dina. I then asked her, if she had a party for four people and wanted to give each person the same size of piece of pie, to show me how she would divide the pie. She demonstrated that she would divide the pie in fourths. I asked her to show how she would divide a pie to serve eight and ten people respectively. She demonstrated correctly. I then asked her, if she had two whole pies and had twelve and eighteen people, how she would divide these pies. Although she did not give equal-sized pieces, she did manage to divide the two pies into enough pieces. I then showed her three whole pies and asked her how she would divide them if she had to serve twenty-four people. Again she did manage to find enough pieces although they were not all equal in size.

This was believed to be a very valuable and practical lesson for Dina. It appears that more work needs to be done with larger numbers. However, Dina can perceive that whole objects need to be divided equally among numbers of people.

I began Lesson III by showing Dina a box of play money. I told her that I was going to give her money and have her spend it with me. First I gave her ninety-nine cents and asked her if she would divide this money up between us. She tried to make the number come out even but discovered that she had one penny left over. I then gave her five dollars and asked her how she would divide this among four people. She

had trouble with this so I asked her divide the money between two people. I suggested that she write it on paper and figure the problem before she tried to divide the money. She was able to make this operation after she had figured on paper what the answer was first.

I then gave Dina twelve dollars and asked her to give me one-half of her money. She performed satisfactorily. I asked her if she would give me one-third of her money. She thought about this for a time then figured out on paper how it should be done. She was then able to perform the correct division of the money. I then asked her if she would give me one-twelfth of her money. She had trouble with this. I suggested she try making twelve piles of money. I gave her twelve dollar bills and she placed each one in separate piles. I asked her to give me one of the piles of money. She did this and I repeated that she had given me one-twelfth of the money.

Dina now appears to be able to divide money into various amounts to some extent. Possibly some more time should be spent on the operations of dividing money for practical purposes and situations.

Comments: The methods employed here demonstrate that concrete media can be used successfully to develop concepts even with students in the secondary school. The teacher assumes that Dina is in the stage of concrete operations.

An interesting development is his asking her to

figure the problem of the money on paper. Obviously she had learned one operation by rote, but had not actually understood the meaning until the teacher showed her how it applied to a concrete problem. Such a lack of comprehension is not at all unusual, and this example points up the need for frequent checking of a student's understanding, even when he performs with great facility with pencil and paper. The teacher's initial assumption was verified and his attack supported. -Ed.

Javier Diaz

Mike is a fourth-grader and is currently attending the resource room for assistance in mathematics and reading. His resource room teacher reports that he is not learning multiplication facts. She has tried to teach him the multiplication facts by rote, but Mike forgets, especially in multiplying by six through ten.

I decided to ask José, a fourth-grader who also attends the resource room and who was assisted by me in learning his table on a previous occasion, if he and I would assist Mike. José responded that it would be fine with him if Mike was willing. I approached Mike with this proposition, and he said it would be all right with him.

Mike and I met the first time to discuss some of the activities, responsibilities for all concerned, and the objectives we were attempting to accomplish.

For our first teaching session, I decided to utilize three different activities with him in order to determine his multiplication readiness and to determine his failure point in twos through the threes. He was told to go to the chalkboard and to count and write by twos up to twenty-four and also to count by threes up to thirty-six. Mike was able to do these two tasks without any difficulty. The second activity involved a quick review of the twos and threes, utilizing the auditory-vocal and visual-vocal and kinesthetic modalities. This task was accomplished through a multiplication game, known as the "T-Game," on the chalkboard:

*Mr. Diaz is a counselor at Crockett Elementary-Intermediate School, El Paso, Texas, Independent School District.

2X	3X
2	4
1	7
6	11
11	2
3	1
5	5
8	12
12	9
10	3
9	6
7	8

We also played the multiplication game called "Guessing Factors," where I would say, "The product of two numbers is 27. Guess the number." Any correct multiple combination is acceptable in this game. This concluded the first day of working with Mike. Throughout the teaching session, Mike demonstrated that he knew his twos and threes, in that he never experienced any difficulties, even in the more difficult Guessing Factors game. I attempted to reinforce Mike's performance with praises and rewards (candy).

For the second and third teaching sessions, Mike and I worked on the fours through fives. The approach was essentially the same as that utilized for our first teaching session. In these teaching sessions, he again demonstrated that the twos through the fives were not that difficult for him. I then asked him if he was ready to tackle the remainder of his tables and

he said that he was not too sure that he knew them as well. At this point, I told him that José knew a "Gimmick" for learning how to multiply by six through ten.

Through the next teaching session José, Mike, and I worked together. José was actually the one who showed Mike how to use his fingers to multiply by sixes, sevens, eights, nines, and tens. José told Mike and me to hold our hands in front of us. He then wrote the following numbers on our fingers:

The little fingers were labeled six; ring fingers, seven; middle fingers, eight; index fingers, nine; and thumbs, ten. José went on to explain and demonstrate how to multiply seven times eight (7 x 8). To multiply seven times eight, José told us to put the seven finger of one hand against the eight finger of the other hand. We were to count the fingers below the touching fingers, including the fingers that we were touching. He told us we would find five fingers and this meant five tens, or fifty. The next step was to look at the fingers above the touching fingers, and we found two on one hand and three on the other hand. He told us to multiply two times three (2x3), or six. This number was

added to the fifty to arrive at fifty-six. José continued to demonstrate and explain the "Gimmick" for the next fifteen minutes. The remainder of the teaching session Mike was told to go over the tables of six and seven. This concluded our teaching session. Mike was told to demonstrate this approach to the learning of his parents. He was also complimented for a job well done.

In the next teaching session, we concentrated on the eights, nines, and tens. Mike enjoyed this method of learning his tables and became very adept at handling multiplication in this manner.

In using the peer-tutoring approach, I felt that both José and Mike were benefitted by this experience. It gave José a real chance to experience success, and enhanced his self-esteem, and he felt that he was being very productive in having assumed the responsibility of helping Mike. Mike, in turn, experienced success, felt more self-confident, and also gained self-esteem. Thus the skills of both boys were improved.

Comments: In these teaching sessions the teacher demonstrates awareness of the use of motor or kinesthetic cues as an aid to auditory memory. In the light of a better understanding of individual learning styles, such methods are enjoying a newfound respectability, not as mere temporary crutches, but rather as legitimate and valid teaching practices. -Ed.

Maudell Fox

Celia is eighteen years old, a moderately retarded student. She is very affable and social. One of the first tasks she began to work on when she came into the resource room was to copy word-for-word from a library book. When asked what assignment she was working on she replied, "I'm writing a report on Daniel Boone." The teacher asked that she let the report wait until her regular arithmetic assignment was finished. She did so. After talking with Celia I learned that she had been given many report assignments which consisted of copying word-for-word from different resource materials.

She is quite capable of doing simple arithmetic and goes about this in a highly structured manner. Always she puts her name and date at the top right hand side of her paper and then carefully numbers her paper on the left side of the paper. Reports were not given to this student as assignments in the resource room, yet many times it was noticed that she used free time for copying from different reference books.

Recently all students were asked to contribute articles from the Christmas newspaper put out by the resource room. Celia typed an article from the encyclopedia about Christmas customs and submitted it. The article was published. Positive reaction came from her contribution. She included customs from many foreign countries that our readers found interesting and customs of which they were not aware. A teacher from another school read it and asked how this student came up with such appropriate

*Mrs. Fox is a resource room teacher at Irvin High School, El Paso Texas Independent School District.

material for the Christmas issue. From her reporting Celia evidently has gained skill in choosing appropriate material. She types well and can stay with a task until it is completed. Her highly structured manner and her ability to attend to a task until it is finished are useful and show maturity appropriate for high school.

Comments: The teacher accepts this student at the beginning of transition from concrete operations to formal operations, a stage usually occurring at about eleven or twelve years of age. She can operate satisfactorily, using concrete experiences from her recent past, namely, copying material from the encyclopedia. The teachers in the school also positively reinforce her application of this skill in choosing of an appropriate and timely topic. Many adequately functioning adults never attain the ability to deal with abstractions, and many others only rarely escape their bondage to the concrete. -Ed.

Maurine Baldwin

This teaching was done with a ten year old boy who has trouble in retaining correctly the sound-symbol relationships.

For the first session, we used pictures of familiar things with their names printed under them but with the first letter omitted. We named each picture and listened carefully to be sure we heard the beginning sound correctly. When he felt sure he had identified the sound, he wrote the symbol in the blank. He was quite successful except for confusing b and d.

In the second session, we decided to study the b and d sounds. We used a picture of a boy and a dog with the words written under them. With these pictures as a guide we had no problem in differentiating the b-d sound symbol. At the end of the period he kept the pictures for reference.

During the third session, we worked without the pictures. We used words with r, s, t, and g mingled with the b and d, and we had no difficulties. He was quite pleased and now attempts to read with more eagerness and confidence. We plan to continue until we have mastered all the consonant sounds.

Comments: The teacher uses visual, auditory, and kinesthetic inputs, concentrates her effort at the success-failure point and, finally, tests the results. -Ed.

*Mrs. Baldwin is a teacher of minimally brain injured children at Cadwallader Elementary School Ysleta Texas Independent School District

Ernie is seventeen years old, a high school junior, and he has been in Special Education for most of his school life. In the two years that he has attended this high school he has been on time for class as few as ten times. Friendliness is this student's main asset. He is well-known and well-liked by many of his fellow-students. When Ernie starts to go to a certain place, for instance, his next class or to the cafeteria, he usually goes in the opposite of a direct route.

In writing articles for the resource room's newspaper, he shows extensive knowledge of sports and writes glowingly about them. The articles exhibit deletions, misspellings, and poor word choices, but reveal great accuracy in reporting. As Ernie works with numbers, directionality is disregarded in tasks such as borrowing and carrying. When this is called to his attention, he says, "Oh Yeah," claps his hands, and begins the task again. The teacher has asked him to give oral directions for addition in the way he understands that addition is done. Usually, he verbalizes addition directions well, but when asked to perform according to his directions, carrying seems to be a new and difficult task each time he tries it.

Oral, one and two-place addition has been tried with him, but he either counts aloud using his fingers, or makes tallying marks with his pencil, until he arrives at an answer. Number facts in subtraction are virtually unknown. He does not like to work often on this, because his success is so limited. Ernie asks to do the same kind of arithmetic that his peers are

working on. A modified assignment is given to him.

Flash cards have been used in teaching number facts; so have Bingo games based on additon and subtraction. A new manipulable program, dealing with math concepts, has just been received by the resource room. This student will begin work on this soon.

Directional confusion seems to permeate the student's total activities except in verbalizing about sports. He is able to give immediate full report answers to most questions concerning all local high school teams such as their rating, their schedules, and even general knowledge of the players and coaches. Ernie is not an athlete, but is an avid sport's fan. Every day as he comes into class he picks up the newspaper, turns immediately to the sport's section and reads until asked to begin a task. With the new manipulable "All about Numbers" programs, Ernie will be asked to use scores from different teams to find averages.

Comments: The report of Ernie is that of a classic example of an apparently intelligent, highly verbal individual whose lack of body orientation in space and whose directional confusion have greatly handicapped his acquisition of mathematical concepts. His case, at least, seems to support Piaget's theory that math is esentially and basically acquired through experience with manipulable concrete objects. It is unfortunate that only at this late date has a teacher analyzed his need. -Ed.

Exploring the Student's Abilities.

Mary Barone

Daryl came to me as a first grader, age 7 years, 6 months, with an extremely short attention span and a lack of skills that was so critical that his teacher was frantic. His parents knew he was very slow in performance, but he had had a heart aliment at birth and had developed slowly. They agreed he should spend part of the day in the resource room.

He was poorly coordinated, did not know right from left, could not tell colors or shapes, could hardly hold a pencil, could not recognize his name, and was very shy. His attention span was very short, and he spent much of his time in the bathroom washing his hands or getting a drink.

Daryl could not count and knew no letters at all. He could not reproduce anything recognizable on paper. He could, however, hold a pencil or a piece of chalk.

I was fortunate to have a student teacher for part of each day, so we were able to work in a small group on gross motor development. Balls and ropes were used for catching, rolling, bouncing, and marching. These things were done outside on the playground. Improvement was noticeable after a few weeks and a program was begun using suggested activities from Move, Grow and Learn by Frostig.

Boxes were used to teach directions, left and right, in and out. Colors were used to identify certain shapes, and the boxes used for activities were decorated as exercises in cutting and pasting.

The children were saturated with activities that involved fine motor skills as well as academic con-

*Mrs. Barone is a special assistance teacher at Logan Elementary School, El Paso, Texas Independent School

tent. By Christmas, Daryl was able to cut and color, could recognize shapes and colors. One area was still very bad. He could not tell one letter from another and could not write his name.

I suggested that the student teacher use a block shape for each letter and draw the configuration for him to fill. I tried it first on the chalkboard. The response was immediate and our student began to recognize his name and write it. My clue was the little trick he had of drawing a box around everything he did and I decided to follow through with this.

By the end of March, Daryl could write letters, he could distinguish sounds and he could draw shapes, but he could not put the shape and sound together. Neither the shape nor the name of the letter stayed with him.

He could do the exercises in Getting Ready orally but not as seatwork. He was beginning to draw people and things that were recognizable. In May, he copied some charts in his home room and the teacher was ecstatic. He was just about ready for the beginning of first grade.

In August he started first grade again and came to the resource room. He was able to copy letters and numbers and could recognize numbers. His muscle development was much improved. He was able to do the work with beginning first graders, but in November the better students began to surpass him and his teacher and I felt he was slipping.

Now I had to concentrate on his visual memory. Drill was always part of his program. We drilled on

letters and numbers and used clay, screening and flashcards to help him, but the only effect was to bore him. Even Bingo was not interesting. His arithmetic was still secure and he was holding his own.

He enjoyed the Disney records with the books for him to follow, so I let him spend a few minutes each day "reading." Then one day he brought me a book called "Bucky's Friends" and told me he wanted to read. Since this is a supplementary first grade reader, I agreed to try it.

At first there were only one or two words on a page, so he was able to read them. As the words got more difficult, I had to insist that he finish a page with my help. I could feel his interest waning so I tried an old method I had used before. I started at the beginning of the book and wrote every word on a card one inch by two inches. I gave him each card as I wrote it. The cards were colored and the writing was in felt pen. After he had five or six cards, I mixed them up and told him to make a sentence, "Bucky is a cowboy." He found all the words. Then I gave him a few more and changed the sentence. We did this for several days.

The last session of the week was writing sentences on paper after he arranged them, and he drew the picture on the top of the page.

He was proud of his paper, and I was proud of him. We will use this as long as possible.

I felt this worked, although Daryle has not been cured of all his ailments. He has just learned to cope with them. This method helped for the following

reasons:

1. The words, and the story they came from, were boy-oriented and highly motivational.
2. The cards themselves formed boundaries which made the words stand out.
3. The arrangement of the cards was in response to an auditory stimulus and he used a motor response to arrange the cards. He used two modalities in a way that did not detract from the visual.
4. The culminating activity was in preparation for an activity he enjoyed—drawing.
5. He copied words that told a story and, therefore, made sense.

Comments: In the preceding account, the teacher has analyzed the child's status from three directions. First, the stage of development was apparently beyond that of most children found operating at this level. Second, the success-failure point for all academic skills was in the sub-skill range of body orientation in space. Third, the teacher utilized a visual barrier, the box, and later, words on cards, to focus attention and establish learning and memory. Ed.

Betty Jo Dodson and Betty Pippin

Auditory sequentialization in reading is an extremely important process and is frequently found to be deficient in dyslexics, most of whom tend to omit or distort syllables in talking, reading, and spelling. The objective of remedial training in working with these children is to instill a consciousness of both the number and the order of sounds within words.

George and Roberto, two dyslexic boys, were found to have difficulty in sequentialization in both reading and writing. Both boys were unable to blend or integrate sound components into wholes even though they knew the letters and sounds in isolation. In order to remedy this condition, exercises were prepared on tape whereby the teacher said the whole word to be learned, then repeated individual syllables, and asked the student to put them together. It was found that one of the boys, George, was unable to discriminate separate consonant sounds in such words as "stop," "crust," or "left." Each sound was given to the student separately by saying the sounds very slowly while writing them on paper. This was done in order to provide practice in distinguishing between sounds and, at the same time, to reinforce sequentialization. After he was able to hear the number of sounds, he was asked to blend them together and repeat the blending until it was firmly fixed in his mind. In addition to this exercise he was asked to manipulate plastic letters by putting words together while simultaneously verbalizing the sounds of the letters.

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*Mrs. Betty Pippin is a resource room teacher at Coronado High School, El Paso, Texas, Independent School District.

Roberto had difficulty in arranging letters in proper sequence when spelling words from dictation. He was usually able to name the correct letters which the word contained but was not able to arrange them in proper sequence within the word. In order to help him analyze and to note particularly the parts of a word, he was given concrete materials. This enabled him to use his hands in arranging anagrams in proper spelling order while verbalizing the sounds to himself. Manipulation of letter titles, accompanied by vocal blending of sounds, seemed to help Roberto establish the proper order of the letters. This method is also being attempted with other class members.

Comments: Analysis of these students' needs was based upon their classroom responses (errors) in reading and written spelling. Teaching was planned to attempt to meet the needs. The taped presentation was supplemented, for George's idiosyncracies, by his saying the sounds while writing them and by his manipulation of plastic letters to build words. Roberto, who knew the names of the letters, was given letter tiles to arrange while vocalizing their names. Thus the three sense modalities were used in teaching both boys, but in ways unique to each. -Ed.

Holly's spatial and directional confusion is almost classic. The first thing she did in the resource room was to write her name on the board, until I finished some work at my desk.

She picked up the chalk with her right hand, put it in her left hand, and tried to make an H. She could not get the cross bar to reach from one side to the other. She could make the letters which could be made in one stroke but she could not make the points meet on a W or an M, nor could she close an A or an O.

Scribbling was a trial for Holly, but she is a determined child and she really improved. For her, we made colored guidelines for writing and boxes (folds) for her seatwork, separating the boxes by outlining in black crayon.

She was given cutting and pasting at any time possible. Counting was difficult because she could not count without skipping or adding a number. When she was given an eye test she could not tell them (by gestures) which way the characters faced. Her hearing test was a disaster and I am certain it was because she could not signal properly.

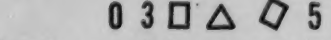
She received gross and fine muscle training along with her academic training, and she has improved considerably. She can copy from a chart or board, she can recognize words both within context and without, and she can read. Her determination is so great that she learned to do the dances taught in Physical Education well enough to be chosen for a performance.

Her next critical area is auditory discrimination, so that is our present concern. Besides using visual cues to her auditory reception, we take care to give only one or two instructions at a time. She is exposed to learning tapes but only for discrimination practice (D L M). She learns best through visual channels.

Comments: Upon the basis of her classroom performance, this child is easily assessed by the teacher as functioning, in part at least, at the sensory-motor stage of development. Muscular coordination and inhibition, as well as spatial orientation, were at a very low level. The teacher began at the lowest subskill, and the child moved quite rapidly up to the point of improved motor control and thence to the reception of abstract symbols in copying and reading. There was awareness, too, in the teacher's initial attention to auditory training, followed by visual and, at length, the discovery of the latter as the child's preferred modality. -Ed;

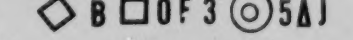
Carlos, age 16, had difficulty remembering math facts. I wanted to find out if this difficulty was a result of visual problems.

I placed a series of plastic shapes and numbers in front of Carlos. He looked at them for several seconds.

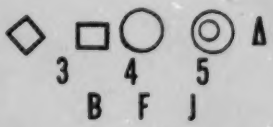


Then I covered them up and asked him to repeat them. He had difficulty doing this. He left out some of the shapes and added the number "4" that wasn't there. I asked him to repeat them in order. This was impossible. I removed the and went through the same process. This time he got them. I added one at a time until all six were in front of him again. He was able to recall them this way.

Next I placed the following larger group on the table in front of Carlos:



He could remember several of these but not in any order. So I grouped them like this:



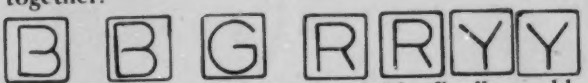
After several seconds I covered them up and he got them all correct.

Next I placed another large group in front of him and asked him to try grouping them on the blackboard of his mind. He studied them for several

seconds, then I covered them up, and he tried to remember them. He got more of them right than the first time but he could not group them well in his mind.

The next time I tried colored blocks. I placed them in front of Carlos:

He studied the blocks but when they were covered he could not remember any of them. He looked at them again. This time he remembered the red and yellow. We worked with these colors for some time. I found that he could get closer to remembering them in order if I grouped two colors together.



This seemed to give him a start and he finally could call off the colors in order. He seemed nervous and easily distracted during this exercise.

For the last exercise I used plastic colored numbers. Example:

5872438921 (He grouped these like this)
587 24 389 21

When he grouped them he could remember them very well. In fact, I felt that he did a much better job with the numbers grouped or ungrouped than he did with colors or plastic shapes. He seems to remember things that are meaningful much better than abstract ones.

The only way I could see that this related to math facts was in the need for training in the use of the blackboard of his mind and in working with fewer math facts in concrete ways, first, rather than in the abstract. I could also see the need for reinforcement over and over again. Thus our next math session we studied only two multiplication facts.

Comments: Here is an example of deliberate testing for modality preference. These same materials and procedures can be employed in teaching and training in the desired skill. The distinction between teaching and testing is not always clear-cut. Teaching is chiefly distinguished in that (1) the speed and difficulty of tasks are adjusted, (2) the teacher supplies the answer as needed, or helps the student discover it for himself, and (3) positive reinforcement is applied to successful responses. In the instance above, the results of the test support the teacher's stated plans for employing concreteness and smaller segments of material in teaching. -Ed.

Betty Jo Dodson

More and more the importance of child development is being recognized in education. The process of learning, from the early motor experimentation of the child to the establishment of abstract concepts, is being seen as one continuous progression. Much of the new thinking in this area recognizes the fact that there are step-like processes in this developmental scale whereby the child goes from one method of processing learning data to a more complex method. Whether this developmental process in intact and complete, in the individual child, has become as important to the educator as is the intellectual level or cultural background.

This idea of learning is particularly important in the education of the slow learning child or the child with a learning disability. Very often a child's method of processing data breaks down and, while his classmates progress to a more complicated level of learning, he remains with limited procedures and thus becomes more and more confused and frustrated with every passing day. It would seem that, if it were possible to go back and restore the primitive areas of development, the child could reach a more complex level and thus be able to keep pace with the requirements of the average school curriculum.

It is with this idea in mind that a study was made of Robert to attempt to determine the extent of his learning disabilities and, hopefully, some avenue of training and remediation which would be successful in this particular case. In order to establish the

strongest areas of learning, various screening devices were used, among which were exercises from Aids To Psycholinguistic Teaching authored by W. Bush and M. Giles. Many of these exercises were used with Robert to determine his areas of breakdown, if any.

Robert is a 17 year old boy who apparently suffers a degree of developmental dyslexia or, possibly, brain damage. He has had academic problems throughout his school years. There is a history of a head injury which required surgery and hospitalization. This accident occurred when Robert was seven years of age, and could most certainly have had some bearing on his later learning difficulties. However, no medical diagnosis of actual brain damage has ever appeared on his record. It was the opinion of the psychologist who tested Robert in 1964 that a combination of the accident, his being hovered over by anxious parents, and a change of location to a new city and school—all of which took place within the space of a few months —were the combined causes Robert's lack of school achievement. At the time of his first testing, Robert was in second grade and had a placement of 2.3 grade reading level. Four years later, when he was retested, his reading level showed little progression, being charted at 2.8.

In an effort to assess the effectiveness of Robert's auditory learning channel, a series of simple exercises were administered to him. In the area of auditory reception, a story was read to Robert,

after which he was required to answer specific questions. This he was able to do adequately. A series of instructions was presented to him, which he was able to follow precisely and quickly. The game "I am going to New York and taking a comb, a suitcase, a hairbrush, etc., etc.," was played. In this area he was able to remember a longer sequence of items to repeat than was the testor. Several other exercises, including a tapping sequence, seemed to give him no trouble. The testor concluded that Robert's auditory reception and association were adequate. When Robert was asked to do exercises involving auditory-sequential memory he had some difficulty. Letters of the alphabet were dictated, with every fourth letter omitted. Robert was unable to supply the missing letter, even though he could write the letters of the alphabet in sequential order. On occasion, when asked to number his paper from 1 to 50, he would invariably omit three or four numbers, even though he can count sequentially. When Robert was given sentences to repeat he showed considerable difficulty in repeating the sentences verbatim, although he was able to give the idea of the thought as expressed.

The teacher then gave Robert some five-letter words, orally, and asked him to spell them. He had some difficulty at first, but he mastered the task and moved on to repeating seven letters in proper sequence. When nine-letter words were given, he again broke down and was unable to complete the task successfully. However, when the group "b m

r l q f e" was repeated, it came back as "b m k m u." The group "r s v l z o p e" was repeated as "r s v l s e v." The teacher felt that she had established a definite breakdown in auditory-sequential. It is hoped that with training in this area, Robert's auditory-sequencing skills can be developed to serve him more effectively.

During a conversation, Robert brought out the fact that when he read he seemed to see too much of the page, and that he was able to do a more effective job of reading if he used a marker. This fact spurred the teacher to give him some figure-ground discrimination exercises. Figures covered with three layers of plastic containing distracting marks were present to him. He appeared to have little difficulty in picking out the figures through the maze of distractions. This was surprising to the teacher since he had mentioned that he often saw the line above and the line below the one which he was trying to read.

In the next session Robert was given several exercises to see whether any particular problem would surface. He was able to give good, logical explanations and descriptions of pictures and situations. In addition, he was able to separate relevant from irrelevant information. When further auditory-sequential-discrimination exercises were presented to him he again met a stumbling block. The teacher stood behind Robert and repeated a series of numbers and words. When "71, 18, 81, 14" was repeated, it was given back as "71, 18, 41,

81" indicating a reversal problem. In the repetition of a series of four simple words, the last two words were always reversed.

Tactile exercises were tried with Robert and he apparently has no problem with this channel of learning. Two pencil points were applied simultaneously to the arm and gradually moved further apart. Robert was able to distinguish that there were two pencils involved when the points were about 3/8 inch apart. The teacher felt this was very good. He was able to tell which part of his body was being touched and to reproduce this touch on the opposite side of his body. He was also able to tell in which direction a stimulus was moving. The kinesthetic channel seems to be intact and it is the teacher's plan to use this channel in an experimental manner to present difficult material.

During a final teaching session some of Ruth Edgington's screening devices were presented to check Robert's knowledge of beginning and ending consonants, long and short vowel sounds, and diagraphs. His knowledge of basic isolated phonetic sounds appears to be excellent. It is only when he tries to blend the sounds sequentially, as in the reading process, that they appear to be troublesome to him. In the exercises requiring the visualization of prefixes and suffixes, as isolated wholes, Robert did very well. Further, he was able to separate correctly the units in compound words. His knowledge of syllabication was adequate.

In attempting to sum up and give a total evaluation of Robert and his learning difficulties, the researcher

is at a loss to comprehend why his reading is so slow, so laborious and, therefore, so unrewarding to him. He appears to have knowledge of certain skills in isolation but when it comes to transferring these skills from one area to another Robert appears greatly handicapped. It was established that there is a reversal problem plus an impairment in a auditory-memory sequentialization. Future remediation plans include training in this area, in addition to the utilization of haptic learning techniques, since the latter learning channel has been somewhat neglected in Robert's case. It is hoped that this added dimension will enable Robert to synthesize his bits of knowledge into meaningful wholes. A great deal of effort will be expended to assist him in correlating "input" with "output" in the hopes that he will be better able to achieve a degree of success in reading and in interpreting the printed word.

This study has been of great value to the teacher not only in increasing her awareness of Robert and his learning peculiarities, but also in giving her teachniques and understandings to be used with other children similar problems. Hopefully, Robert, too will ultimately receive some residual benefits from having been the main participant in this brief study.

Comments: This case illustrates the procedures in exploring and analyzing the student's difficulties in the teaching situation. She is neither testing only under the guise of teaching; nor is she teaching blindly, with no understanding of what is actually transpiring. -Ed.

The subject, a six year old boy, answered with only a nod of his head or in one word answers such as "yes " or "no" when school first began. We use the Distar Language Development Program with him thirty minutes each day. As a follow-up through the day, we talk informally with him, having him speak in complete sentences and having him label objects. We model the sentence or the word for him, as many times as necessary, and have him repeat it until he does so correctly.

Some of the first words we worked on were:

Hello
Good Morning
Good Bye
How are you? Response: Fine, Thank you.
Please
Thank You
Excuse me

Labeling objects is an important part of language development. We first worked on naming objects that are in the room or that he uses during the day at school and at home. Then we had him use the name of the object in a complete sentence:

Table - This is a table.
Pencil - This is a pencil.
Coat - This is a coat.

We use teaching colors to help him describe objects. The following are examples:

Red - This apple is red.
Red - This coat is red.
Red - This fire engine is red. (Use real objects

*Mrs. Duncan is a teacher of mentally retarded children at Cadwallader Elementary School, Ysleta, Texas Independent School District.

such as artifical fruit and toys)

During story time we have him name pictures in the story. Also we have him tell about the story, giving names of the characters or giving parts of the story.

He is taught to repeat simple rhymes and jingles.

Comments: The teacher analyzes this child's needs from all three points of view. She first recognizes that he is not ready to begin learning to read until he has a language. Still lower on the ladder of sub-skills, she begins with auditory training. The procedure here is logically sequential also: names, then sentences, then memory for rhymes and stories. Second, the visual modality is engaged by means of colors and objects, but not yet by abstract printed symbols. Third, the use of vital experiences preceding vicarious ones takes account of his pre-operational stage of development. -Ed.

Sandra Jorgensen

Jim, age seven, is repeating the first grade. He still does not have good command of the English language even though the primary language of the home is English. The main problems Jim has are prepositions and verb usage.

Jim seems to know many nouns. I showed him many pictures, and he knew the names of most of them. He could not give me complete sentences about them.

I decided to teach Jim language through the use of his body. Since he knew the words I, walk, sit, stand, jump, I decided to start with these in building sentences. I also wanted to try a system of rewarding him whenever he used a complete sentence, even when he was copying me.

The first sentence we worked on was "I am walking." I modeled for Jim, by walking and saying the sentence "I am walking." Jim then did what I had done and repeated the phrase after me. After saying it three times after me, he could do it by himself. I then modeled the sentence, "I am sitting," using the same procedure as for walking. This time he could do it after repeating after me only twice. After showing and saying the two phrases again, we concluded the session.

Before we went to something new, in session two, I had Jim demonstrate that he knew the two sentences learned in the previous session. After my prompting him once he could say and do the four sentences with little or no prompting. I continued to reward him for every complete sentence.

*Mrs. Jorgensen is a special assistance teacher at Coldwell Elementary School, El Paso, Texas, Independent School District.

In session three, Jim and I reviewed the work of the previous two sessions before going on to another sentence. Following the same procedure as in the other sessions Jim learned "I am standing" and "I am hopping." He learned these after being shown and told only twice.

I decided at this time that I would put Jim in the Distar program for language. This program teaches the children to speak in complete sentences and to use verbs and prepositions, which is what Jim needs. This, along with continuing the motor activities, is my plan for Jim's language development.

Comments: This report shows a teacher responding wisely to a common problem by

(1) recognizing oral language as a subskill to reading,

(2) treating the need sequentially in the manner in which an infant learns language, and

(3) utilizing the kinesthetic modality to reinforce the auditory-vocal channel. -Ed.

Carol, age 7, was referred to the resource room by a second grade teacher. The teacher said that Carol was new in the school this year, and that she had no records from the previous year but that she had been in the system. She said that Carol did not appear to have the background needed for second grade work.

I took Carol to my room to try to discover the problem. I asked her the name of the school where she went last year. She said that she did not know. She also said that she did not know what books she had been using at that school.

Since she had been in the El Paso system, I decided to see if she could remember any of the words from the pre-primer used by that system last year. She did not read any of them, even those from the first pre-primer. I then asked her the names and sounds of the letters of the alphabet. She said the name for A and none of the others.

At this point I decided to find out how the child learns, because usual methods had apparently not been successful during the first grade. I showed her a simple two-block design; she copied it quickly. I then skipped several designs. She still showed no signs of difficulty. When I tried parquetry designs, she slowed on the time, but did them through the large parquetry. I decided that there was no difficulty here. The next session I would check her visual memory.

Since Carol seemed to have no difficulty in perception, I decided in the second session to try her

memory. I showed Carol several objects, a bear, duck, car. I covered them and removed one. I then asked her to tell me which one was missing. She told me. When I did this with four objects, she did not tell me which one was missing.

I then tried visual sequential memory. I placed one object, and then Carol would do what I did. Carol did not succeed with a pattern of three. I stopped here.

In view of this session, I feel that Carol needs work on visual memory and visual sequential memory.

Now that I felt that I had something to go on in visual, during the third session, I wanted to check the auditory channel. I gave Carol some of the words on the Wepman to see whether the words were the same or different. She did not tell me correctly on any of them. I then tried the buzzer board sound patterns for Carol to reproduce. I made one short buzz. This she could reproduce. I made one long buzz. When I made two long buzzes, she made one long buzz. When I made the pattern one long and one short, she made one long buzz. I concluded from these activities that there might be an auditory discrimination problem.

Summary: I feel that Carol has a deficit in visual memory, visual sequential memory, and auditory discrimination. All of these are needed for learning how to read. I plan to continue using the D L M discrimination program going from gross sounds to more refined ones. I plan to develop her visual memory by using memory games and selected visual

activities. While these are being strengthened, I plan to use a tactile, kinesthetic approach to her learning.

Comments: The type of analysis carried out in these sessions demonstrates informal teacher testing procedures. The same, or similar, activities are used when the teacher attempts to develop academic skills or subskills. The teacher's decision to utilize the child's most efficient input channel is based upon the evidence of less efficient functioning of visual and auditory modalities. -Ed.

After giving the screening for reading by Fountain Valley, I found that one of my fourth graders had a difficulty in sentence and picture sequencing. Although he can read phonetically on a fourth grade level, he could not do the comprehension on the second grade level. According to the screening, he has difficulty putting events into proper sequence. This could be the reason that Monty, ten, does not understand a lot of what he reads.

I decided to try Monty with pictures first before we tackled the reading of sentences. I used the DLM sequencing cards. He had very little difficulty with these. I had some cards that I had made from cartoons. The ones that I used first had words on them. I had Monty read the lines on the cartoons. He then would try to put them into the proper sequence of events. After reading them with him, he had little difficulty in putting these into the right order. We discussed each of the sequences completely before going on to the next one.

I then had Monty read a very simple story to me. We discussed the story thoroughly. Then Monty would tell me the story in his own words. The session ended here . . . .

In session two, I presented Monty with cartoons with more difficult sequencing. Many of these did not have words that he could use as clues. I discussed each of the actions with Mike, and had him tell me what usually happens first, second, and third

in a given event.

Monty had done so well in the previous exercise, I decided to see if he could put a group into order without prior discussion with me. He could do these readily if there were no more than four pictures in the group, but if there were more, he had difficulty. After he put the pictures in order, I had Monty tell me the story. I then had him write a sentence to go with each picture. At this time I used only three or four cards in a group.

Monty appears to understand the sequence better if it is vocalized. I will encourage him to read aloud those things in reading that he seems not to understand.

Comments: This case demonstrates the teacher's potential in screening, analyzing, and developing the student's skills. Many instruments, many instructional materials, and many sources of information are available to the teacher whose courage and confidence are intact. -Ed.

Analytic Teaching

First teaching and testing session: In order to discover the most successful learning modality for each of the three dyslexic boys, ages 17, 16, and 15, participating in the teaching session, the instructor used the screening device, Sensory Modality Preference Testing (Beery, Westerman, Wilkinson, 1968). The criteria task objectives were that the subjects would be able to write correctly 40 spelling words after 4 days instruction and that the instructor would know by which modality each subject learned with the greatest ease.

During the first teaching session the experiment of using different methods of teaching spelling words was explained to the boys and their cooperation enlisted. All three boys were enthusiastic about the experiment since it was hoped the results would be useful to them as well as to the teacher. My opening statement was, "I will present to you ten words, two by each of five different methods. The first word is review. Say the word, spell it aloud." (audio-vocal). The boys responded by this method correctly four times. For the second presentation I said, "The next word is gorilla, g-o-r-i-l-l-a. Write the word on your paper." (audio-motor) At this point Carlos became frustrated.

"I cannot write it. Say it again! I can't get it right!" (I made a note that the audio-motor channel was perhaps the least effective mode of learning for Carlos).

I then showed a flash card and said, "Look at the word durable, say it and spell it for me." (Visual-Vocal).

George and Roberto had little difficulty but Carlos made several errors and again showed frustration at not being able to listen and repeat verbally what he had heard. I then showed the boys defensive on a card and said, "Look at this word and write it." (visual-motor). Carlos had some success here. The remaining two words were presented by the multi-sensory channel of "say, spell, and write" on paper. After the presentation of the eight words by using five modalities the results were tallied from testing done at the conclusion of each day's lesson. George and Roberto were mildly interested in the results. Carlos, who was extremely tense throughout the first screening session, asked again and again, "What did I make? Did I fail?"

I responded, "This is not a test nor is it being graded. This is simply an experiment to tell you and me by what method you learn to spell most readily."

"I have to see something to learn it," replied Carlos. "How many did I miss?" The tally sheet was marked with the help of the boys, and showed that George had responded correctly in three modalities, Roberto in three and Carlos in one input channel only. (See attached chart)

Second teaching session: The boys seemed to look forward to continuing the experiment. Carlos commented, "I did bad yesterday but I'm going to do better today. This won't be a grade." Carlos seemed much more relaxed during the next sessions. (I recorded the fact that perhaps a part of his consistent failure pattern was his tenseness and

fear of making an unacceptable grade.) During the next screening sessions Carlos was much more relaxed.

Follow-up session after screening: Since Carlos had missed so many words on the screening device I concluded that his failure point had been approached and that many of the words given were too difficult for him to grasp. Hence, during the next session I worked with Carlos alone and attempted to teach him a list of 16 words by using the visual-vocal approach. The first word was disobey which was shown on a flash card, spelled and copied by Carlos. I noticed that he divided the word into syllables the second time he copied it. I then dictated purse. Carlos responded with, "That's a one syllable word," but reversed the u and r.

"Listen, Carlos. PURSE. Do you hear the vowel sound before the r?"

"No, it sounds like pr to me."

"Listen carefully to the difference between print and purse."

He then seemed satisfied and said, "I hear it now." (I made a note to do future remediation in the audio-vocal area).

Final teaching session: I worked with Carlos alone again to see if any further information could be found again regarding his preferred sense modality. We opened the session by spelling the 16 words which were learned on the previous day by visual-motor input. Carlos missed 6 out of 16 which was commendable. A list of 10 new words was presented using the visual-motor channel with haptic reinforcement.

"Carlos look at the word angel, write it, then take the plastic letters and spell the word on the table. As you spell it, say it aloud, 'angel,' blending the sounds." Carlos handled successfully several words of comparable difficulty.

I then decided to present three words of greater difficulty, bacteria, immigrants, and invasions. Carlos was unable to learn these words so I dropped back to words of no more than 5 letters. (I made a note for future reference to do some auditory and visual memory training). The final word dictated was eager. I said, "Look, Carlos, there are two vowels together in this word. Do you know the rule which usually applies to words like this?"

"Yes, the first one is long," he answered.

"Yes, the first vowel is long and the second is silent. e-e-e-ger. Remember this when you write this word on your test. In spelling this word with plastic letters he had difficulty in properly placing the "a." He spelled egaer, then egare, then finally eager. The ten words were then dictated and Carlos missed 8 of the 10 which was the poorest showing he had made since the first day's session. I concluded that the haptic approach had not helped and may even have hindered him. Words presented by the visual-motor approach seemed to be learned most quickly; however, Carlos needs extensive practice on each word before he really learns it. He knows sounds in isolation, can syllabicate, but has difficulty in blending sounds. Carlos' linguistic development, other than this area, seems to be adequate. He

expresses himself well verbally. There appears to be a lag in fine motor development as evidenced by his illegible handwriting and the occasional difficulty he experiences in some manipulative activities. As a rule, he chooses to print. I sincerely hope that with diligent effort Carlos will continue to make progress in the ease with which he is able to learn to spell. I would recommend continuing presentation of words through the visual-motor channel with remedial training to aid him in listening for and discriminating between sounds within a word.

	AUDIO-VOCAL	AUDIO-MOTOR	VISUAL-VOCAL	VISUAL-MOTOR	MULTI-SENSORY
MONDAY	Review Athlete	Gorilla Memory	Durable Mistake	Defensive Praise	Trouble Scandal
TUESDAY	Moisture Fashion	Straight Passenger	Hammer Breathe	Illustrate Missile	Vulcanize League
WEDNESDAY	Success Knowledge	Digestion Jealous	Generous Ache	Advertise Rough	Cyclone Onion

Spelling words to be presented each day by five modalities

CORRECT RESPONSES*	AUDIO VOCAL	AUDIO MOTOR	VISUAL VOCAL	VISUAL MOTOR	MULTI SENSORY	DAILY TEST SHORT TERM RECALL	FINAL TEST LONG TERM RECALL	DAYS OF WEEK
GEORGE	2	1	2	1	2	8		MON.
	2	1	2	2	2	9		TUES.
	2	2	1	2	1	8		WED.
	9 3	6 2	9 4	7 2	8 3		14	THURS.
CARLOS	0	0	1	0	0	1		MON.
	1	0	1	2	0	4		TUES.
	2	0	2	2	2	8		WED.
	5 2	2 2	6 2	6 2	3 1		8	THURS.
ROBERTO	2	2	2	2	1	9		MON.
	0	1	2	2	2	7		TUES.
	1	1	1	2	2	7		WED.
	6 3	5 2	7 2	9 3	9 4		14	THURS.

Betty Jo Dodson

Comments: This case demonstrates the initial use of a simple analytic instrument to identify preferred modalities in spelling. It is noteworthy that the teacher then pursued the investigation by original and ingenious teaching methods. The difficulty in helping Carlos is compounded by his age and his repeated failures after so many years in school. Habits of evading or denying a problem tend to rigidify as the youngster grows older. -Ed.

Mary Barone

October 17

Sheldon has been with us more than two weeks now. The biggest problem has been to keep him busy with meaningful activity. He is with us for most of the day, but his attention span is extremely short. The most meaningful activity I have found for him, which does not require direct supervision, is listening to story records and following a book.

I have a few records from Walt Disney which give vividly colored story illustrations. Sheldon scrutinizes these and follows the story with a cue from Tinker Bell when it is time to turn the page. Because he enjoyed the records, I decided to try the tapes used in first grade for number readiness. The series is called Ten Little Indians and uses colored discs. The child is instructed to place the colored discs in certain positions. I should have realized this was too difficult, but with others in the room I had a need for an activity that my aide could supervise. Sheldon listened but could not carry out instructions. He was not able to "put the disc at the top of the table" or at the "bottom of the table" as the record directed. We had to go back and familiarize him with these terms.

We used a box and instructed Sheldon to put those rubber monkeys in the box. With prompting he could do this. The little monkeys seemed to hold his attention. He was willing to make these movements and repeat the cues "under," "over," "beside," "top," "bottom." He did well with the monkeys and the box, apparently because the box was a concrete object in a neat shape. There was no transfer to a table top. ("The table" was the

term used on the tape). He could not find the top and bottom. I suspect he has difficulty with his own position in space.

I considered the whole lesson a failure, but not a waste of time because:

1. It confirmed an earlier suspicion that Sheldon needed work to improve his spatial relations and position in space.

2. Shape was the clue. He needed a neat distinct shape to relate to. The box was an aid.

3. I would need to improve his spatial relations before he could learn any academic subjects.

4. I needed to check his auditory memory to see whether he could remember what he heard long enough to perform the task he was asked to do.

I planned to do certain things to follow up.

1. To have him repeat the Pledge of Allegiance after me during morning exercises. (His poor speech would not be a problem since we would be alone.)

2. To have him play "Simon Says" and test his ability to carry out instructions.

3. To give him experience with DLM Spatial Relations cards to check his reaction when no motor activity was needed.

4. To test his oral responses to oral discrimination of letter sounds.

October 18

1. I have discovered that Sheldon can say short phrases after me, but only those that have meaning for him are said in any clarity. "To the flag," "for which

it stands," and "liberty and justice for all," came through quite clearly. This was, in my opinion, the usual reaction of a child repeating anything by rote.

2. While playing "Simon Says," he could not distinguish right and left, but he could find many parts of the body that some of the children did not know--such as "elbow." He lost interest quickly, however.
3. Sheldon did better than expected with spatial relations cards. He could tell "under" and "in" when you asked the questions:
   Where is the car? Where is the spoon?, etc.
4. He could, by himself, tell the difference between a "p" and a "b" a "d" and a "t" when I repeated these sounds. He could also produce these sounds correctly after me. I am sure he would have difficulty with some of the other sounds since his Wepman showed this. I was not testing his speech, but his memory. He was able to remember four sounds and repeat them correctly. I do not consider memory a factor.

October 19

I am continuing with chalkboard exercises for Sheldon. This morning I noticed an interesting quirk. I had drawn a circle on the board and had put points on its circumference for him to connect. He was quite disturbed when he discovered one point on the circle that overlapped. He tried to close it himself and when he failed, he asked me to fix it.

I tried leaving letters open too. I made an "a" that was not closed, then an "o" and, finally, I tried other shapes. I got the same reaction each time I left a letter or shape open. Maybe if I enclose everything in a box or shape, it will help Sheldon. It seems to give him security and to help him locate himself.

Drawing dark lines for Sheldon's dotted copy of his name has helped by finding each letter of his name in a pile of black alphabet letters and putting them about his paper. I think he was made aware of the composition of a word or name.

Perhaps cursive writing would help, but first I must improve his motor skills. Tracing has helped.

October 20

Sheldon could not color a picture, but today he colored a scribble drawing which I made for him in pencil. He outlined each part and was able to stay in boundaries. His color combinations were beautiful and he was pleased with his work. I wonder why Sheldon could color that and not a picture? Shape, rhythm? Parts that just fit together, but need no "whole" concept?

October 21

Today Sheldon had a full-size drawing of himself to color. He did very poorly. He colored only hair and a shirt with no attempt to make it like himself. I believe he has difficulty with his position in space. He cannot see himself in a picture or drawing.

He tries to establish himself next to the wall or behind a table that is closed off at two sides and has a wall on one side. With three sides protected,

he provides a space called a "door." When he does role-playing, he plays "store." He seems to enjoy being behind a "counter."

Sheldon can now write his name with the help of dots and can connect his numerals with concrete objects or pictures of objects to five. He is learning six. He cannot make the numeral without prompting with a dotted copy or a model.

He knows a few letters, but does not always know the same ones. He can do puzzles, block designs and peg board designs, and he can cut out shapes. He cannot tell a story, but he can speak in phrases and short sentences. He needs help with motor skills and spatial relations as well as oral expression. I am convinced he is an auditory learner and will use this modality.

Comments: The classroom teacher will seldom encounter a child whose level of development in several areas is as low as this one. This case demonstrates the possibility of analyzing a student's needs from his responses in the classroom with no more than ten to fifteen minutes individual attention each day. A teacher does need to be aware of the meaning of the observed behaviors and of the pre-skills or subskills needed for the most common academic tasks. This knowledge may be acquired from reading, by discussion with one's peers, and through in-service training. More important are courage and genuine regard for every student of whatever ability. -Ed.

Marta, age seven, is repeating first grade and, according to her teacher, is doing little better than she did last year. On the WISC, she received an I.Q. of 68 with verbal 66 and performance 70.

I took Marta into the resource room to teach her some number concepts. She could rote count to ten. When I showed her one block and asked her how many, she said, "One." When I showed her two blocks and asked her how many, she said "Four." I asked her to count them and she said, very rapidly, "One, two, three, four."

I showed her two stacks of blocks one with four and one with one block. I asked her which group had more. She showed me correctly. I asked her which group had the smaller number and she told me correctly.

I asked Marta to write the number one, which she did. I asked her to write the number two, and she wrote a seven.

I concluded the lesson here. I feel that she needs to build a number system using very concrete objects that she can see, feel, and hear.

Since Marta needed to use concrete objects in learning number concepts, I decided to use candy in the second session. When Marta sat down, I asked her to get one piece of candy out of the box. This she did. I then asked her to get another piece from the box. She did this, showing me that she knew the idea of another.

I told her to pick up one piece of candy. I asked her how many she had. She replied, "One." I told her to pick up the other pieces of candy.

I asked her how many she had now. She replied, "Five." I counted the candy for her, and then had her to say the number with me. I then asked her to count them by herself. This she did. I then asked her how many she had. She replied, "Two." I praised her very highly for this.

I told her that she might eat the candy. When she had eaten it, I asked her how many she had eaten. She replied, "Two." I told her to get two more pieces of candy from the box. She got three. I then showed her two pieces of candy and told her to get two while showing her how many two is. She then took two from the box.

On a piece of paper, Marta drew two balloons, two kites, two wagons, and two ice cream cones. As she did each pair, I would ask how many she was drawing. She would answer, "Two." The session ended here.

For session three, to check to see whether Marta retained the idea of two, I asked her to get two pieces of candy from the box. This she did. I told her that she might eat the two pieces of candy.

On the chalkboard, Marta and I drew pictures of things in sets of two. We then drew a person on the board making sure that it had two eyes, two ears, two hands, and two legs. We then looked in the mirror to see what was in sets of two.

Since Marty knew the numeral one, I decided to work on the numeral two. I began drawing the numeral on paper that had been placed on a piece of screen. Marta then traced the figure I had made.

feeling the rough texture made by the screen. I then had her make a numeral two on the screen. Again she traced the figure with her finger.

I showed Marta the numeral one and two on cards. She could identify both of them.

The session ended here.

Comments: This is an outstanding example of the applicability of the analytic concept in teaching. Whether the student is bright, or slow, or retarded, is of no particular consequence. The teacher explores the child's developmental level, his success-failure point, and his preferred input modality, and proceeds upon that basis, gauging speed, difficulty, and type of task to the child's uniqueness. -Ed.

Sara's teacher referred the six-year-old child because she seems to be unable to write or copy from charts, blackboard, or other papers, and does not function in any academics in the first grade room.

When Sara came into the room, I talked to her about her family (names, ages, what they did) and she answered, but she did not offer more than what was asked.

I asked her to write her name on a piece of paper. She began on the right side of the paper and went to the left. She made the S backward and the rest of the name was unrecognizable. I wrote two names on the paper, Sara and Billy, and asked her to show me her name. She said that she did not know. I made some simple objects on the paper which she copied. She copied a circle, square, rectangle, circle with an x inside, square with + inside, a triangle, but did not copy a diamond, a wagon, or a tepee.

I then used one-inch colored blocks. She copied me when I made a one, or a two-block pattern. She did not if I exceeded two blocks. I then showed her a picture with one red block, and she put out one red block next to a blue. She put a yellow block on a blue one. I asked her if the blocks looked like the picture and she said yes. I tried another picture of a green block next to an orange. I stopped here with the blocks.

I asked her to show me the parts of her body, nose, ears, chin, and feet, which she did without hesitation. She did not show me up, down, next to,

under. I then asked her to draw herself. She drew a head with large eyes, and stick arms and legs coming from the head.

Sara then drew, colored, and cut out a circle which she did well. She returned to her room.

Sara sat without much movement during the session, and she spoke only when spoken to or to answer a question. When she left, she asked if she could come back.

For the second session, I decided to try Sara in the Developmental Program in Visual perception by Frostig, in the beginner book on page one, to develop left to right progression, and to help her see the limit to lines. She had no difficulty staying in the lines, and would start on the left after being shown several times where to start. Sara progressed quickly through smaller lines and curves after being shown each time to start on the left. When shown a square and asked to find the other squares on a page mixed with triangles, she did not. I cut a square from cardboard and allowed her to feel it and place it on the page to find the squares. I then took away the cardboard square and asked her to find the squares which she did by tracing the lines with her fingers. I showed her a different page of shapes and she again found the squares by tracing.

We then worked with the colored one-inch blocks. I made a pattern up to four blocks with Sara watching and she copied it step by step. I then made a pattern of four blocks with Sara watching. She then copied it. I showed her a picture of a block pattern

with two blocks. I made it with the blocks and then she made it. I then showed only the picture and she made it correctly. I used the same procedure until we reached a pattern of four blocks.

At the third session, we continued with the Frostig Visual Perception, going to the page of discriminate squares. I let her feel the cardboard square first, and then she discriminated the squares, and she found the circles. To reinforce the feeling of the square and the circle, she drew them in the sand box with her fingers and then on paper placed on a screen. She then distinguished circles and squares, when mixed on a page with other shapes, and called them by name.

We then made pictures using the circles and squares by adding wheels to make a wagon, or eyes, nose, and mouth to make a face. Sara copied these and suggested some of her own by making a beach ball and a television.

I tried her on the pictures of the block designs that we had done. She did the ones with one or two blocks unaided but it was necessary to show her how to do the others. She did them more quickly than she had at the previous lesson.

I plan to continue using the Frostig Program, the block designs, and others to increase Sara's discrimination of shapes and forms. I intend to use as many tactile things as possible since she seems to prefer this modality. I also want to increase her awareness of her position in space. I also plan to work on associations of pictures and real things. I feel

that she needs this background before she can succeed in academics.

Comments: This is a beautiful example of analysis while teaching, the teacher adapting, as she goes along, to the child's current ability, using another modality (kinesthetic: cardboard square), moving steadily upward as the child is able. The teacher continues developmentally, again enlisting the haptic modalities for discrimination of shapes, pausing at the success point for reinforcement (drawing pictures), then upward again with designs. The student demonstrates steady progress. -Ed.

In Pursuit of Excellence

Betty Pippin

In recent years children with learning disabilities due to brain dysfunction have been given more consideration by educators. They are not mentally retarded, emotionally disturbed, cerebral palsied nor sensorily impaired, yet they are not able to learn normally. There are two important things for the teacher to consider in working with these children. First is the kind and extent of the learning disability or disabilities, and second is the best modality or modalities to use in teaching them. This paper is concerned with exploring these two areas in a specific case study and using a specific subject, arithmetic. A study of a pupil in the resource room of a high school was made to determine the kind and extent of his learning disabilities and the best modality or modalities to use in teaching him math.

Carlos is a boy of 16 who has been in special classes for educationally handicapped children the greater part of his school life. He is currently a freshman in high school and is in the resource room for Math and English remediation. He has been taught to a great extent through his auditory and visual senses and has many problems in learning. This study will include learning exercises and teaching sessions using not only his auditory and visual channels but also his tactile and kinesthetic senses. It is hoped that in this way a better understanding of his disabilities and the modality to use in teaching him will result. Observations, analytic teaching sessions, and therapeutic activities will be used.

It is estimated that approximately fifteen per cent

of all school-age children have learning disabilities to some degree. The schools have not been meeting the needs of these children; therefore by the time they reach high school they have poor attitudes toward any learning situation. Many of them have developed emotional problems and most of them have a very poor self-image. A better understanding of their learning problems, and of methods of teaching them, is needed. In an in-depth study of one high school pupil, with many learning problems, much should be gained to help him as well as other high school pupils with learning problems.

Three teachers will observe Carlos to note his responses and reactions in different learning situations. I will make one of these observations, one will be made by a teacher's aide as she observes me teaching Carlos, and one will be made by the other resource teacher in her class.

Four analytic teaching sessions in arithmetic will be held involving the use of all senses (V.A.K.T.) individually or together with special emphasis on his tactile and kinesthetic senses. These sessions should help determine by which modality he learns best. The last session will be video-taped.

Activities involving all of his senses, individually as well as together, will be used to determine the kind and extent of his learning disabilities. Tactile tests should help determine whether Carlos has any dysfunction in his tactile sense.

In order to have some background information on Carlos, past school records and tests will be read and

studied. I will talk with other teachers who have Carlos in other classes to understand his attitude and actions in other learning situations.

Children with specific learning disabilities exhibit a disorder in one or more of the basic psychological processes involved in understanding or in using spoken or written language. These may be manifested in disorders of listening, thinking, talking, reading, writing, spelling or arithmetic. (4, p. 4) There are four areas through which a child learns and through which the teacher may teach. Children with learning disorders need to employ them all. They are abbreviated as V.A.K.T.—V-visual, A-auditory, K-kinesthetic, and T-tactile. (6, p. 88-89)

The visual and auditory channels are the primary ways of learning for all of us; however, a child with a learning disorder must use the other two channels in the teaching and learning processes if he is to learn effectively. There is a great deal of information pertaining to the auditory and visual input channels. Exercises involving auditory and visual reception, association, and memory, have been developed for children at each grade level and can be used to determine to a great extent the area and degree of a learning disability that a child has . (1, p. 1) However, there is comparatively little information concerning the processes of kinesthetic and tactile channels of learning. (2, p. 39)

Motor activity involves the kinesthetic channel. Tracing and outlining a large letter or word over and over again is a good example of this activity.

The letter and word must be large enough to use the arm muscles as opposed to using only the wrist muscles and fingers, as in standard writing. This type of motor activity reinforces what the eye sees. One of the best tools for kinesthetic teaching is the individual slate board. (2 p. 89-90) The magic slate is a good substitute.

In the book, Central Processing Dysfunction in Children, kinesthetic and tactile learning are referred to as haptic learning which is an integration of the two processes. The haptic system provides two main kinds of information: concerning the environment as related to touch and concerning movement of the body itself.

Some of the cutaneous (touch) dysfunctions are failure to (a) identify the presence of pressure on the skin; (b) localize the point of mechanical stimulation; (c) differentiate two or more stimuli which are applied simultaneously; (d) indicate the direction of an object moving over the surface of the skin; (e) register sensitivity to pain and temperature. (2, p. 40) Some tests involving these will be used in this study.

The kinaesthetic sense makes little demand on our attention. Yet, even without seeing movement, we are aware of positions taken by different parts of the body. Breakdown in kinesthetic processing can interfere with the feedback of kinesthetic information. In this study, kinesthetic processes will be limited to such things as tracing and outlining a large letter or word or number on paper or magic

slate or in the air or in sand. The purpose will be to reinforce what the eye sees. (2, p. 43)

Every reference indicated that much research needs to be done on haptic processing, not only to acquire more precise behavioral descriptions of the dysfunctions in the haptic system, but also to explore the compensatory advantages of using the haptic modality to compensate for children who have dysfunctions in auditory or visual processing.

In working with children through their visual, auditory, kinesthetic or tactile areas, another very important factor is discussed in Careth Ellingson's book, The Shadow Children. She says that proper association is a necessary factor in helping children with learning disorders. The child must understand that the number "3" is not just a symbol but means an amount. He must have "three" of something to touch, count and/or see and associate this with the number "3."

Carlos is a nice looking, bright, all-around boy of sixteen. He converses well on a variety of subjects and gets along fine with his peers. He has several interests, the most important one being motorcycles.

His has had a history of learning problems throughout his school life. These problems have probably been over-shadowed and over-looked because of his nice personality, ability to get along in a group, and willingness to learn. Therefore, at the age of sixteen, Carlos is in high school with many learning problems, not well defined. Now answers must be found and decisions made about his immediate future.

Part of his problem stems from his background. His father is of Puerto Rican extraction and his mother is Mexican with a severe problem in speaking distinctly. This has caused Carlos much difficulty in sorting out communications between his parents.

According to the diagnostician's report, Carlos' greatest problem is visual-motor with some auditory difficulty and mental alertness problems. Neurological testing was advised and given, but test results were negative.

Physically Carlos is in excellent condition. He has never had any prolonged illnesses. He wears glasses which give him almost 20/20 vision. Although some tension is indicated in his anxiety to learn, he has had no history of emotional problems.

In talking with other teachers who work with Carlos, I found that all agree he is a hard worker, determined to learn and willing to try any task he is asked to do. The physical science teacher was very surprised to know that Carlos needed special help in the resource room. He indicated that Carlos has done exceptionally well in the lab experiments but did have difficulty in the written work which is kept to a minimum.

Observations indicate that Carlos has a good attention span, working well for thirty minutes or longer at a time. He can be distracted by other noises in the room if the task at hand is more abstract than concrete. (Example: discriminating pencil tapping sounds as opposed to remembering a

sequence of numbers.) Observations also indicated that he has at least one nervous habit, moving his foot up and down rapidly when trying to think of the answer to a problem or remember what letter comes next in spelling a word. He follows directions well and does not get upset quickly.

The following activities are a few of the many used with Carlos to help determine the extent of his learning difficulties and to identify the sense or senses by which he learns best.

Auditory Memory

METHOD: Pencil tapping under the table, Example: .. .. The student listens and repeats with his own pencil or orally.

RESULTS: On simple taps he could do well; on longer, more complicated ones he was distracted by other noises in the room and even when it was quiet he could not always remember them. This exercise was also used with visual aids, (showing him a series of dots while I tapped them out under the table) but he still had difficulty on the more complicated ones.

METHOD: Following and understanding verbal directions. Example: "Put your name on the top line of your paper near the center of the sheet. Put a triangle in the lower left hand corner of your paper." As we continued, the directions became more detailed and difficult.

RESULTS: Carlos had to think and move his pencil over the paper several times before deciding where to mark. On the longer, more difficult directions he was lost unless I would go back and repeat them over one at a time.

METHOD: Understanding stories read orally.
Example: The story of "Narcissus and Echo" was read aloud and followed by some questions on the story.
RESULTS: This was the most successful experience he had in auditory reception. He remembered all the details and knew the answers to all the questions.
METHOD: Call out groups of numbers and have child repeat them. Let each succeeding group get longer than the one before.
RESULTS: Carlos could do this fairly well as long as the numbers were grouped.
METHOD: A series of directions were given to Carlos to do in the classroom. Example: "Go to the teacher's desk, get the pencil and eraser, take them to the table in the corner and bring the book from the table to me."
RESULTS: This exercise was carried out very well.

Auditory Association

METHOD: Have child tell about the processes necessary in developing something.
RESULTS: Carlos told of the many processes necessary to make a book. He was able to do this pretty well, mentioning the wood pulp, printing press, binder, publisher, etc.
METHOD: Ask cause and effect questions: Why do our bodies need food and water? What causes the tide to come in and out?
RESULTS: Carlos had difficulty expressing some of the answers on the more difficult questions but he knew what he was talking about.

METHOD: Have the student listen to and repeat directions that may be given. Example: Directions to a boy going on his first date.
RESULTS: This was done very well.

Visual Association

METHOD: Show the child several pictures. He tells you how the pictures are alike. Show a second group of pictures and child tells how they are different.
RESULTS: Carlos had difficulty understanding this activity at first, but by the second group of pictures he understood and did a very good job of it.
METHOD: Show the child a picture and have him write three different sentences about it.
RESULTS: This was an interesting activity because it was the first one that required writing his thoughts in his own words. This is exactly what he wrote: "The meast of the day falls a pom the share of the ctasle that stands tall." He wrote this on three lines, hence his three sentences.

Directionality, Spatial and Quantitative Concepts

METHOD: Give the child a drawn map of the street in front of the school and have him finish the map showing how you get from the school to his home.
RESULT: His map was not spaced well to show distance and directions but he knew exactly the streets and turns to make to get to his home.

Visual Reception

METHOD: Have a child look at a picture and make up a story about the picture.
RESULTS: Carlos tried to be poetic in telling his

story and some of the thoughts were not clear or meaningful.

METHOD: Have child use map of his state and route himself from his home city to some distant place in his state. He must figure mileage, time, and possible cost in gas.

RESULTS: Carlos figured the distance to Houston within one mile of that shown on the map. After he had several figures on his paper I asked him how far he thought it was and he said it was at least 10,000 miles. I had to help him figure the time and cost of gas.

Visual Memory

METHOD: Place several colored blocks in front of the child. He looks at them for a few seconds, then they are covered up, and he tells the colors in order.

RESULT: Carlos had much difficulty with the exercise. Outside noises bothered him, and he could not remember them in order unless I grouped them in small groups.

METHOD: Place plastic numbers in front of the child. He looks at them for a few seconds, then they are covered up and he says them in order.

RESULTS: Carlos remembered these much better than he did the colored blocks; especially if they were grouped. Example: 27 54 342

Tactile Tests

The following tactile tests from the book, Central Processing Dysfunctions In Children, were used to determine if Carlos had any dysfunction in the tactile sense.

METHOD: Finger differentiation test. Subject faces the examiner with his eyes closed. One hand is positioned with palm down and fingers spread apart. The examiner touches two fingers simultaneously and asks the subject to tell how many fingers were in between the ones he touched.
METHOD: Finger block test. Four wooden blocks with distinctive shapes are used. Subject's fingers mold around one block, eyes closed, and block held below table. Subject opens his eyes and picks out corresponding block on table.
METHOD: Move an object across the skin's surface. The child indicates direction of the object moving across the skin.
RESULTS: Carlos was able to do all of these tests very well. This indicates that he probably has no dysfunction with the tactile sense.

Because Carlos has some difficulty learning by the usual usual auditory and visual channels, and shows no dysfunction in tactile sense, a series of teaching sessions followed, with emphasis on the tactile channel. The kinesthetic sense was also emphasized in these teaching sessions.

First Session:

In math Carlos has had real difficulty with the multiplication facts. By this teaching session he had learned most of the smaller combinations and some of the larger ones. However, he was having difficulty with combinations involving 6, 7, 8, and 9. We went to the blackboard and wrote the 8 and 9 multiplication facts together. We traced and retraced the ones he was having difficulty with and said them aloud at the same time. Then we did some line intersections, starting with four lines. We counted the intersection points and set up the multiplication facts to correspond with them.

Example:

$$\begin{array}{r} 4 \\ 4 \\ 4 \\ +4 \\ \hline \end{array} \qquad 4 \times 4 = 16$$

We continued this type of exercise through 9 x 9. It was interesting, easy and relaxing for Carlos, but a review of the multiplication facts with flashcards indicated that he still had trouble with the larger combinations. We finished the session with Carlos doing some multiplication problems at the board.

Second Session:

We decided to concentrate on the multiplication facts that Carlos has trouble with. These were:

3	4	7	9	6	9	9	9
8	8	8	8	9	7	3	4

I had these combinations cut out of sand paper and glued on large cardboards. I had him close his eyes and trace the numbers saying them aloud as he did. We did each card several times, then we used flash-cards to see if there was any carry-over to learning. The problem was still there and I felt the tracing was too new and awkward to be effective at this time.

Third Session:

We used the magic slate in this session working the problems together. He seemed to enjoy this method of working with the multiplication facts. I decided that we were trying to do too many problems at the same time, so I picked out only two combinations: 9 x 7 and 9 x 4. I used these because both had the same numbers in the answer. We added and multiplied our facts.

Example:

```
 9          4 x 9 = 36
 9
 9
+9
```

We also reversed this to 9 x 4 = 36 and added the nine 4's in a column. Then we went over 9 x 7 the same way. I decided to introduce the sandbox to him in this session. I explained to him again the importance of using the sense of touch when one has visual and auditory problems. I had him trace

the numbers 4 x 9 = 36 and 9 x 4 = 36. Because he was ill at ease, we just tried this method a few times. Then we went back to the flashcards to see if there was any carry over. These two combinations seemed to be much easier for him than they have ever been before. The other 6 combinations were still difficult for him.

The next day I used the flashcards with him again and he still remembered 9 x 4 and 9 x 7. He concluded that, "I'd better get my own sandbox." I think he is ready to learn through the tactile and kinesthetic senses.

Fourth Session:

This session was recorded on video-tape at the college and was a follow-up to working with the sandbox. It was not effective. Carlos was nervous and unable to remember even the combinations that he normally knew well. However, he has agreed to continue working his multiplication facts in the sandbox on his own in the classroom.

CONCLUSIONS

1. Carlos' auditory problems are his poor auditory memory and his inability always to understand directions auditorily.
2. He has some visual-motor problems in spacing and writing, but the real motor problems seem to arise when he must express himself in writing, not when he writes what he sees.

3. His greatest visual problem is poor visual memory. He has great difficulty in seeing numbers and words on the blackboard of his mind.
4. He has some difficulty in expressing himself verbally but this is probably due to his limited vocabulary and lack of understanding of the meaning of words.
5. He has distractibility on abstract exercises but very little on concrete ones.
6. Carlos' best way to reinforce his learning, if not his best way to learn, could be his haptic senses.

RECOMMENDATIONS

1. Carlos should be taught small segments of material at a time and it should be reinforced over and over again. Any new modality cannot be of value unless it is introduced slowly and used many times.
2. Concrete rather than abstract material should be used as often as possible and new concepts should be introduced concretely.
3. He needs auditory and visual memory exercises to help improve his memory. The DLM Materials, on his level, might help.
4. He needs to be taught as much as possible through his haptic channels, using the sandbox sandpaper, clay, pipe cleaners, and other three

dimensional materials to feel and touch letters, numbers, and words.

5. His inability to judge distance and to show space accurately on paper indicates that he needs remediation in these subskills along with the ones already mentioned.

I feel that this study was very beneficial to both Carlos and me. I understand the extent of his learning disabilities much better and feel that I can now try several new modalities to help him learn. He is more ready and willing to try new ways of learning.

I also think this study will be very valuable in working with other students in the class. I plan to do the same type of study with each of them.

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Washington D. C.: U.S. Government Printing Office, 1969.

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New York: Grune and Stratton, 1969.

4. Kirk, Samuel A., and Winifred D. Kirk, Psycholinguistic Learning Disabilities Diagnosis and Remediation
Champaign, Ill.: University of Illinois Press, 1971.

5. Arena, John I., Editor, Building Number Skills in Dyslexic Children
San Rafael, California: Academic Therapy Publication, 1972.

6. Hellmuth, Jerone, Editor, Learning Disorders, Vol. I
Seattle, Washington: Special Child Publications, 1965.

Comments: The accompanying study was undertaken voluntarily and upon the teacher's own initiative, because of the need to clarify certain concepts for personal satisfaction and self-improvement. It is included in this collection because of (1) the use of a number of instructional activities to analyze a student's learning style, (2) the references to several of the better publications, and (3) the teacher's unusually perceptive conclusions and recommendations.

The teacher has a firm theoretical basis for her study of the student. The results forcefully illustrate the increased difficulty which develops when a student's problems persist into the secondary school. If these idiosyncracies had been recognized earlier and adaptations in teaching implemented in the primary grades, or even in the elementary school, progress would no doubt have proceeded much more smoothly and rapidly. The teacher's increased confidence, initiative, and self-esteem are important by-products of the study. -Ed.

APPENDIX:

Recommended Readings

In The S. E. I. M. C.

Recommended Readings

01-0024 Smith, Frank and Miller, George A.
The Genesis of Language
Cambridge, Massachusetts, Massachusetts Institute of Technology. 1966. Collection of presentations from a conference on "Language Development of Children" April, 1965. Of interest: McNeill's theory, Slobin's reply. Highly theoretical.

01-0025 Adler, Sol
The Non-Verbal Child
Springfield, Illinois, Charles C. Thomas, 1964 Easy to read. Valid. Logical. Practical.

01-0027 Goldstein, Kurt M. D.
Language and Language Disturbances
New York, Grune and Stratton, 1965
Of practical use in analysis of learning, (esp. pp 56 ff) in language, arithmetic, gesture. Tests.

02-0002 Smith, Bert Kruger
Your Non-learning Child–His World of Upside Down

Boston, Mass., Beacon Press, 1968
Excellent for simple explanation of learning disabilities.

02-0005 Cruickshank, William M.
The Brain-Injured Child in Home, School, and Community

Syracuse, New York, Syracuse University

Press, 1968
Of particular value to the special assistance or resource teacher.

02-0010 Bortner, Morton
Evaluation and Education of Children with Brain Damage
Springfield, Illinois, Charles C. Thomas, 1968 Contains teaching suggestions.

02-0013 Cratty, Bryant J., Whitsell, Leon
Perceptual-Motor Behavior and Educational Processes
Springfield, Illinois, Charles C. Thomas, 1969 Sensible treatment. Suggestions.

02-0016 Myklebust, Helmer R., and Johnson, Doris J. Learning Disabilities
New York, Grune & Stratton, 1967
Comprehensive theory of Learning Disabilities

02-0018 Cruickshank, William M., Junkala, John B., and Paul, James L.
The Preparation of Teachers of Brain-Injured Children
Syracuse, New York, Syracuse University Press, 1968
Ideas for teacher enhancement.

02-0019 McCarthy, James J. & Joan F.
Learning Disabilities
Allyn and Bacon, Inc., Boston, 1969
Survey of theories, literature on Learning Disabilities

02-0020 Anderson, Lauriel E.
Helping the Adolescent with the Hidden Handicap
California, Academic Therapy Publications,

1970 Indications of learning disability causes of delinquency. Up-to-date information. High school dyslexic.

03-0001 McDonald, Eugene T. and Chance, Burton Jr.
Cerebral Palsy
Prentice-Hall, Inc., Englewood Cliffs, N. J., 1954 The Brain Language development.

04-0007 Kidd, Aline H., and Rivoire, Jeanne L.
Perceptual Development in Children
New York, N. Y., International University Press, Inc., 1966
Review of theories of perception. Amplified treatment of perceptions.

04-0011 Baldwin, Alfred L.
Theories of Child Development
New York, New York, John Wiley & Sons. Inc., 1967
Traces six theories of child development recommendations for integrated theory.
pp 587-599

04-0012 Maier, Henry W.
Three Theories of Child Development
New York, New York, Harper & Row, 1965 Treats three theories, four helping systems, including diagnosis and treatment

04-0013 Illingworth, R. S.
Development of the Infant and Young Child
E & S Livingstone LTD., 1967
Excellent examination of infant, including retardation. Tests for child.

04-0014 Gesell, Arnold
The First Five Years of Life
New York, New York, Harper & Row
1946
Classic. Must reading for comparison.

04-0016 Mussen, Paul Henry and Conger, John J. and Kagan, Jerome
Readings in Child Development and Personality
New York, New York, Harper & Row, 1965
Recommend thorough review. 48 contributors.

04-0018 Gardner, D. Bruce
Development in Early Childhood
New York, New York, Harper & Row, 1964
Discussion of field. Sequential tables, charts.

04-0019 Hellmuth, Jerome
Exceptional Infant-The Normal Infant VolI
Seattle, Washington, Special Child Publications, 1967
Bayley scales of motor and mental development. Individual differences. Infant learning. Thorough treatment all phases.

05-0001 Berkowitz, Pearl H. And Rothman, Esther P.
The Disturbed Child
New York, New York, New York University Press, 1960

05-0020 Loughmiller, Campbell
Wilderness Road
Austin, Texas, University of Texas, 1965
Describes camp, near Dallas, for disturbed boys.

05-0024 Caplan, Gerald
Emotional Problems of Early Childhood
New York, New York, Basic Books, Inc., 1955 Etiology. Cases. Treatment.

05-0025 Long, Nicholas J., Morse, William C. & Newman, Ruth G.
Conflict in the Classroom
Belmont, California, Wadsworth Publishing Co., 1965
Gamut of understanding, etiology, and teaching techniques for disturbed.

05-0028 Smith, Bert Kruger
No Language But A Cry
Boston, Massachusetts, Beacon Press, 1968
Reference. Help for teachers with parents.

05-0029 Axline, Virginia M.
Dibs—In Search of Self
Boston, Massachusetts, Houghton Miffin Company, 1964
Touching story of a child's return to emotional health.

05-0030 Knoblock, Peter
Educational Programming for Emotionally Disturbed Children
The Decade Ahead
Syracuse, New York, Syracuse University, 1964
Teacher-student communication

06-0028 Harin, Norris G., and Schiefelbusch, Richard L.
Methods in Special Education
New York, New York, McGraw-Hill, 1967
Many practical ideas for analysis, teaching. Discussion, explanation of handicaps.

11-0073 Stephens, Beth
Training the Developmentally Young
New York, The John Day Co., 1971
Developmental scales. Practical ideas for assessment, teaching. Sound.

13-0027 Dechant, Emerald
Detection and Correction of Reading Difficulties
New York, Appleton-Century-Crofts, 1971
Every teacher needs a copy for study and reference.

13-0028 Guszak, Frank J.
Diagnostic Reading Instruction in the Elementary School
New York, Harper & Row, 1972
Excellent handbook: checklist, scoring cards, suggestions for teaching.

14-0017 Valett, Robert E.
The Remediation of Learning Disabilities
Belmont, Calif., Fearon Publishers, 1967
Programs, pp 22-24; 27-34; 36-38; 40-51

14-0069 Arena, John I.
Building Number Skills in Dyslexic Children
San Rafael, Calif., Academic Therapy Publication, 1968
Teaching ideas. Development of arithmetic awareness, pp 81-86

14-0085 Ginsburg & Opper
Piaget's Theory of Intellectual Development An Introduction
Prentice-Hall, Inc
Good source, especially math, pp 218-232

14-0056 Westerman, Gayle S.
Spelling & Writing

San Rafael, Calif., Dimensions Publishing Co. Practical. Procedure for discovering learning modalities.

14-0083 Pulaski, Mary Ann Spencer
Understanding Piaget
New York, Harper and Row, 1971
Outstanding for understandable explanation, practical application of developmental stages.

INDEX

A

analysis 37, 41-44, 48-49, 56-61, 63-67, 69-71, 82-89
analytic teaching, defined 9-13
auditory association 83-84
auditory discrimination 36, 52
auditory memory 42, 41-42, 64, 82-83
auditory sequencing 33

B

Beery 56
blackboard, mental 38
blocks 48, 72, 74
body image 67, 73

C

comprehension 54
concrete media 11, 16-18, 69
configuration 30

D

design 48, 67, 72, 73, 74
heterogeneous 37, parquetry 48

developmental stages 40
directionality 26, 29, 35, 44, 64-5, 72, 84
Distar 53, 46
diversity in classroom 6, 8
D L M 36,49, 54, 64, 90
dominos 16,

E

Edgington 43
elementary school cases: 19, 25, 29, 35, 46, 52, 48, 54, 63, 69
Ellingson, Careth 80

F

Fountain Valley 54
fractions 16-18
Frostig 29, 73, 74

G

gestalt 30, 64, 66, 74

K

kinesthetic sense 25, 34, 43, 74

L

language development 46-47, 52-53
learning disability 6, 77-80

M

math 11, 26, 38, 69-71, 87-88
Montesorri 11
motor cues 20-21
motor response 21, 32, 52, 54, 55
multiplication, finger 21

O

older students, difficulties with 27 62, 92, 78

P

parquetry 51
peer tutoring 20-21
Piaget, stages 10-12, 24
psychologist 8

R

reading 31, 52
reinforcement 52, 69, 20, 39
retarded student 23, 69
reward 20, 52, 69

S

secondary school cases 16, 23, 26, 33, 37, 40, 56, 72, 77
sense modalities 12-13, 32, 34, 56, 77-80
auditory 25, 41, 67

kinesthetic 22, 25, 34, 43, 74
tactile 74
visual 25
spatial orientation 62-63, 76, 74, 84
spelling 56-62
sound-symbol relationships 25, 33
sub-skills 13, 52, 68
success-failure point 13, 25

T

tactile tests 85-86
teaching vs testing 39, 50
theory and practice 5
tutoring, peer 20-21

V

visual association 83
visual memory 37, 49, 85
visual reception 25, 85
visual sequencing 38, 49, 54
vocalizing 55

W

Westerman 56
Wilkinson 56